

RS-232/422/485 to Copper or Fiber
Ethernet Converter
User's Manual

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Introduction

Product Overview

This Serial Device Server features complete Ethernet and TCP/IP network support that allows equipment with RS-232/422/485 connectors to connect to LAN-based TCP/IP networks.

Product Features

- Complies with EIA/TIA and IEEE Standards.
- Supports 4 wires full duplex asynchronous serial data transmission (RS-422/485).
- Supports 2 wires half-duplex asynchronous serial data transmission (RS-485).
- Supports serial port asynchronous data rates up to 230.4 kbps.
- Extended distance up to 1.2 km (24AWG) via RS-422/485.
- Extended distance up to 100 meters via Ethernet Cat. 3/4/5 cables.
- Extended distance up to 2 km via Ethernet multi-mode fiber optic cable.
- Extended distance up to 75 km via Ethernet single-mode fiber optic cable.
- Supports auto-negotiation of speed and duplex mode on Ethernet copper port.
- 3-in-1 RS-232/422/485 serial interfaces.
- Terminator feature improves signal quality and distance.
- Automatically rebuilds connection after power restart.
- Setup and management via serial interface.

Packing List

When you unpack the package, you will find items listed below. Please inspect the contents and report any apparent damage or missing items immediately to our authorized resellers.

- Serial Device Server
- User's Manual CD

LED Indicators

The LED indicators give you instant feedback on the status of the Serial Device Server:

LEDs	State	Indication
PWR (Power)	Steady	Power on
	Off	Power off
LNK/ACT	Steady	Valid network connection established LNK stands for LINK
	Flashing	Transmitting or receiving data ACT stands for ACTIVITY
STA (STATUS)	On	Idle
	Blinking	Active / Running
FDX	Steady	Connection in full duplex mode FDX stands for FULL-DUPLEX
	Flashing	Collision occurred
	Off	Connection in half-duplex mode

Installation

This chapter gives step-by-step installation instructions for the Converter.

- Location
- Desktop Installation
- Powering On Unit

Location

The location selected for installing the Serial Device Server may greatly affect its performance. When selecting a site, we recommend the following suggestions:

1. Install the Serial Device Server in a fairly cool and dry place. Please see The Technical Specifications for the acceptable temperature and humidity operating ranges.
2. Install the Serial Device Server in a location free from strong electromagnetic field generators (such as motors), vibration, dust, and direct sunlight.
3. Leave at least 10cm of space at the front and rear of the unit for ventilation.
4. Affix the provided rubber pads to the bottom of the Serial Device Server.

Desktop Installation

Follow the instructions listed below to install the Serial Device Server in a desktop environment.

1. Place the Serial Device Server in a clean, flat, and safe position that has easy access to AC power.
2. Affix the four self-adhesive rubber pads to the bottom of the Serial Device Server.
3. Apply AC power to the Serial Device Server (The green PWR LED should light up).
4. Connect cables from the network partner devices to the ports on the front panel (The green LNK LED should light up).

Power On Unit

Serial Device Server uses an external power supply.

1. DC jack: Connect the supplied AC to DC power adapter to the receptacle on the Serial Device Server. Connect the power cord to the AC to DC power adapter and attach the plug into a standard AC outlet with the appropriate AC voltage.
2. Terminal Block: Connect the DC power wires directly into the terminal block located at the Ethernet port side of the device. Please pay attention to the polarity of the power connection. Connect the ground terminal (G) to chassis ground if it is available.
3. Turn on power supply. As the device is powered on, verify that the Power LED lights up. If not, check whether the power wires are connected correctly.

Configuration

The Serial Device Server can be set up directly through its serial port. After the initial serial port setup, you may also configure it remotely through a telnet program or web browser.

Initial Serial Port Configuration

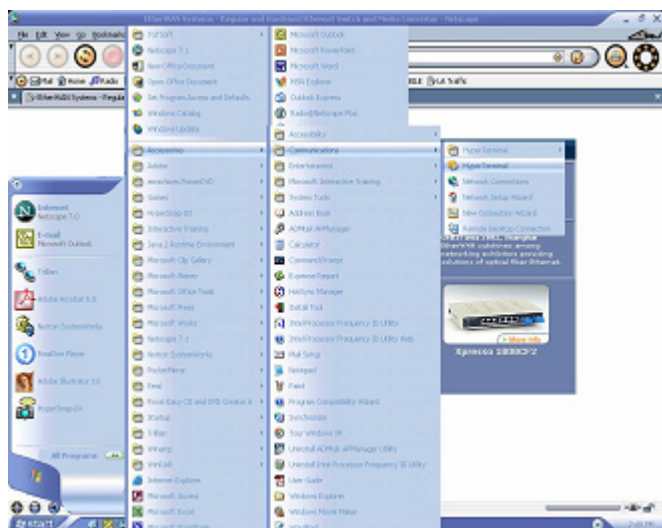
The initial set-up of Serial Device Server is done through the unit's serial port. Prior to following the instructions listed below for HyperTerminal Configuration, make sure that the Serial Device Server is connected to a computer through a serial cable.

(Note: the Serial Device Server is preset with a factory default IP address 192.168.1.10; that must be changed to a valid and unique local address. It is important to do this so that your Serial Device Server doesn't conflict with other devices with the same default IP address. This will be done in the following steps)

Serial Port Configuration

To configure Serial Device Server through serial port, you will need to run HyperTerminal.

1. Open HyperTerminal in Windows from the Start menu. It's usually under *Accessories/Communications*



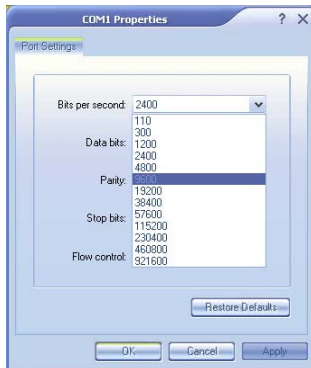
Enter a name (for example, Terminal Server) and choose an icon for the connection.



2. In “Connect To” pick a local com port for “Connect using” (for example, COM 1)

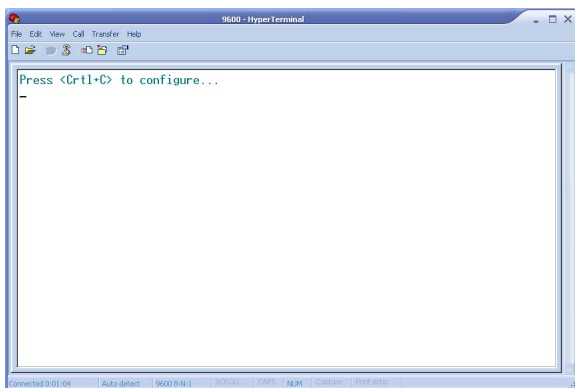


3. In “Port settings”, set your “bits per second” to “9600.” Leave everything else at default value. Click “apply”, then “ok”.



Note: You must set emulation to VT100 instead of auto-detect. You can do this by going to “File -> Properties -> Settings -> Emulation.”

4. Make sure the Serial Device Server is connected to your computer’s serial port before turning on the power. If it’s ok, power on the device and the following screen will appear shortly.



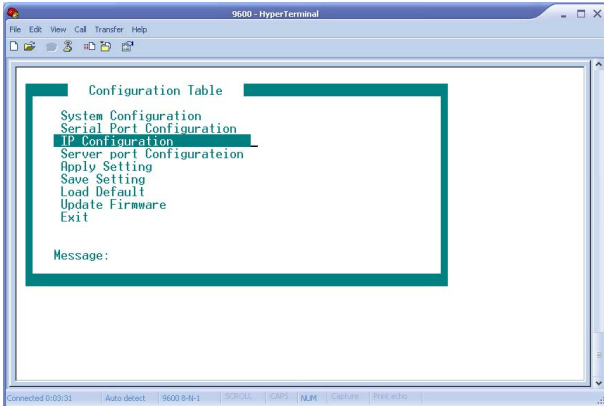
5. The message “Press <Ctrl+C> to configure” will show up about 17-20 seconds after powering up.

Note: This is for the first time configuration only. If the device has been configured before you can skip this step.

The device only responds to “Control C” command within 4 seconds after this message appears.

You have to shut down the device and reapply the power to get into this menu if you missed this time slot.

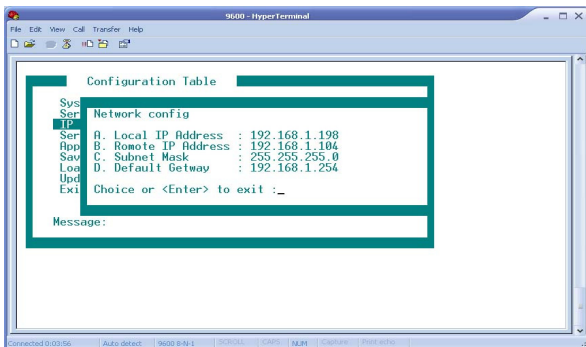
6. The main menu appears. Press “W” and “S” to scroll up and down in the menu.



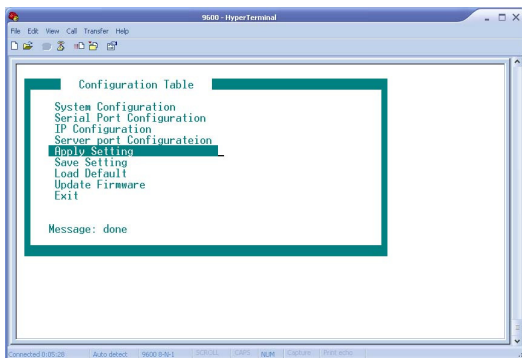
Scroll down to “IP Configurations” and press “Enter.”

Note: The IP address and Subnet Mask must be consistent with your Local Area Network settings in order to access the Serial Device Server remotely. It is important to set up the IP address first to avoid any network device conflicts.

7. Type “A” for Local IP address. This is the IP address for the Serial Device Server that you are setting up. Type “B” for Remote IP address. Remote IP address is for the device on the other end of this connection. The remote device could be another Serial Device Server or a computer. “C” for Subnet Mask, and “D” for Default Gateway Address (Router).



- Go back to the main menu by pressing “Esc” and scroll to “Apply Settings.” Press “Enter” to apply your new settings. “Done” appears to confirm that the changes have been applied.



Proceed to “Save Settings”. Press “Enter” and you’re done setting up the unique IP address for Serial Device Server.

We suggest that you use web access menu to change the serial baud rate after the initial serial port set up.

Telnet Configuration

The menu is exactly the same for telnet interface. You can now telnet into the Serial Device Server from any computer within the network with the IP address previously configured via serial port. The menu and functions are identical to web browsers' with differences only in appearance. More menu items and configurations will be explored in the next section using a Web Browser.

Web Browser Access To Serial Device Server

Serial Device Server IP Address

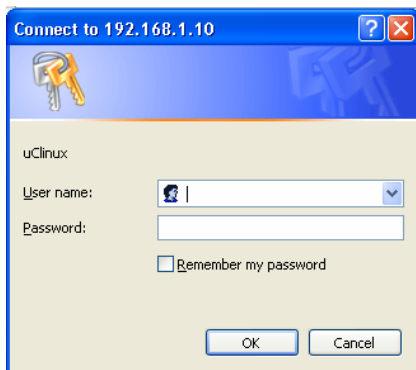
In your web browser, enter the IP address of the Serial Device Server (i.e. 192.168.1.10 if you did not change it from serial port yet).

User Name

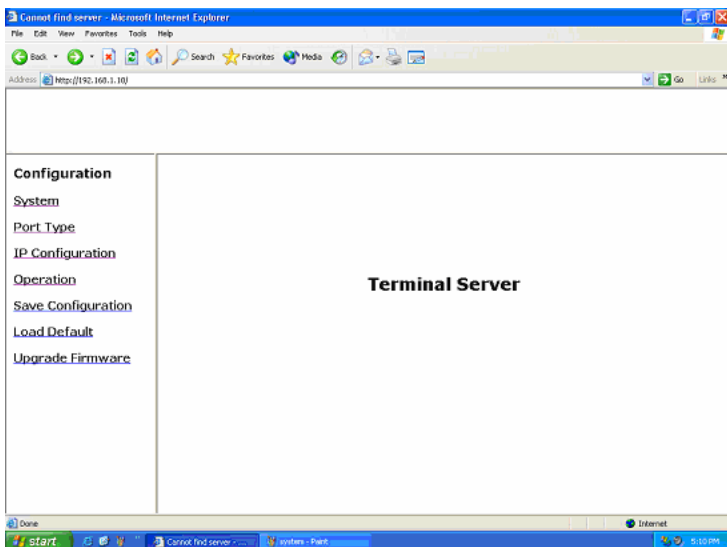
Enter user name (Factory default is *blank*. Press Enter to bypass).

Password

Enter password (Factory default is *blank*. Press Enter to bypass).

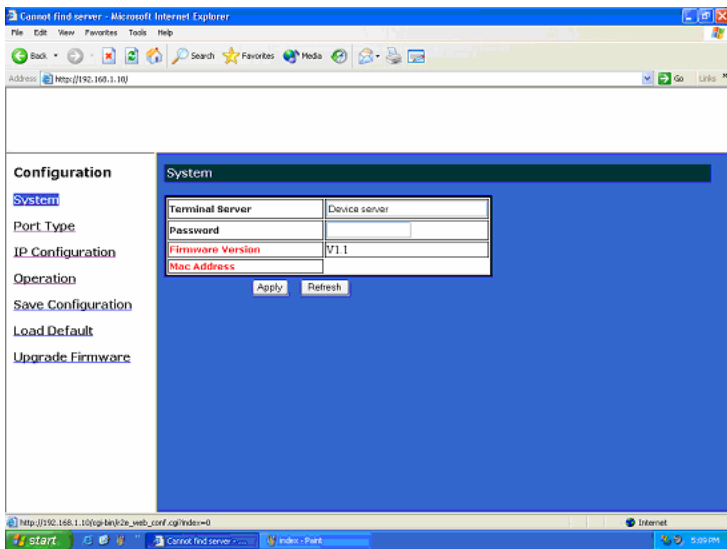


Main Menu



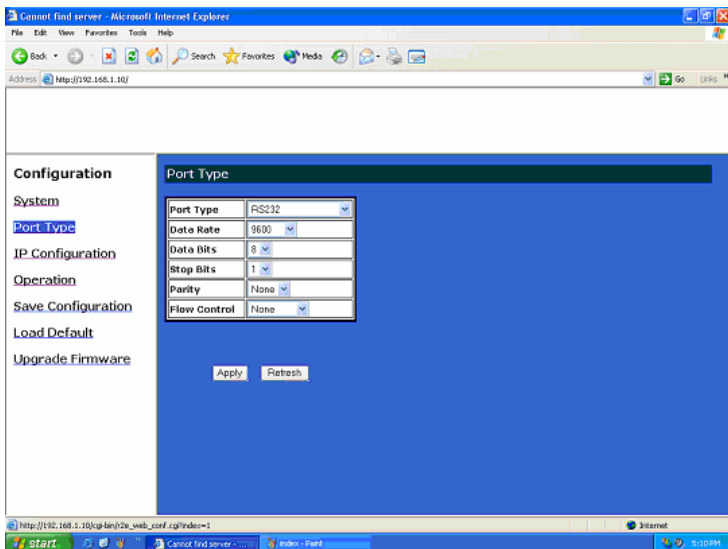
System

The System parameters can be displayed by clicking the System button in the left sub-menu.



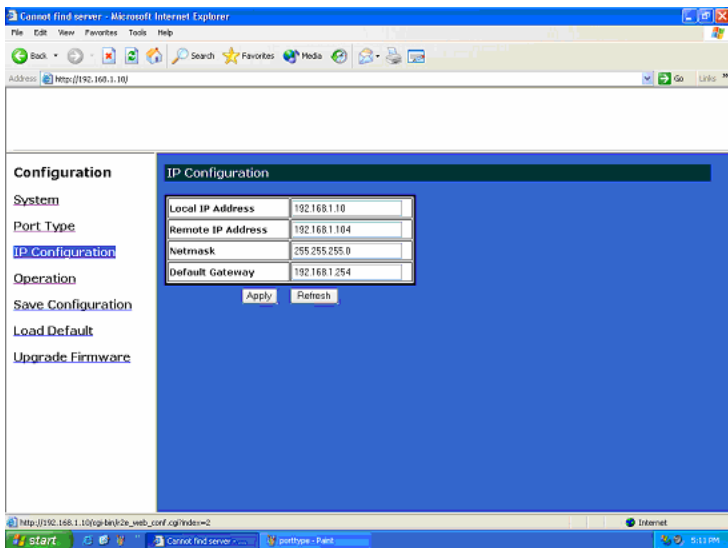
- **Terminal Server:** You may assign a new name to your Serial Device Server.
- **Password:** Enter a password to change the factory default.
- **Firmware Version:** It will show the firmware version. This is a read only field, you cannot change this.
- **Apply:** Click the Apply button to confirm your settings. The word “complete” appears to confirm the changes.

Port Type



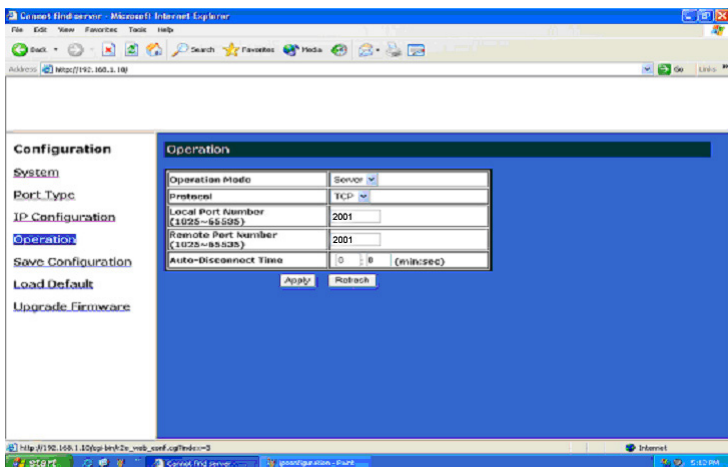
- Port Type: Choose a port type. You can choose one of three modes: RS232, RS485-2wire, and RS485/RS422-4wire.
- Data Rate: Choose the transmission rate.
- Data Bits: Choose between 5, 6, 7, or 8 bits.
- Stop Bits: Choose between 1 or 2 bits.
- Parity: Choose between None/Odd/Even Parity bits.
- Flow Control: Select the Flow control.
- Refresh: Click the Refresh button to update the screen to the last saved Port Type.
- Apply: Click the Apply button and apply the new Port Type.

IP Configuration



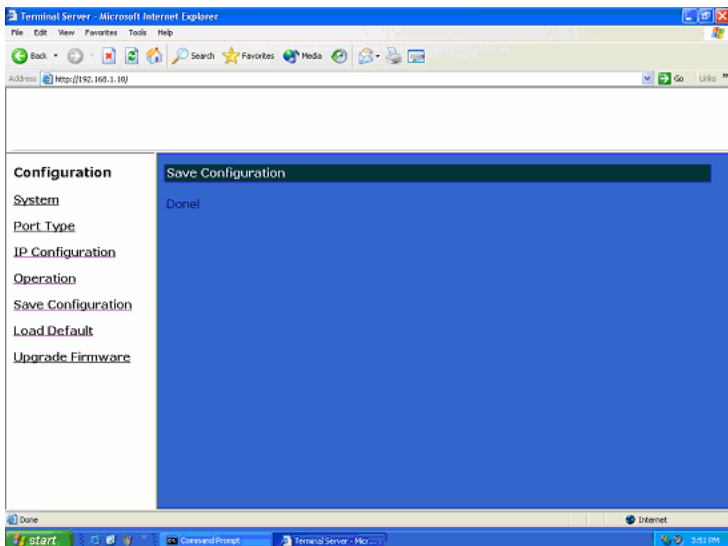
- **Local IP Address:** The IP Address for the Serial Device Server. This is usually done in the initial configuration via serial port. If you change it here, you will lose your current connection. You will need to use the new IP address to come back.
- **Remote IP Address:** The IP address for the device on the other side for the Serial Device Server to connect to.
- **Netmask:** The Network Mask for your local area network.
- **Default Gateway:** Enter the IP address of the default gateway or router of your local area network.
- **Refresh:** Click the Refresh button to update the screen with the last saved IP Configuration.
- **Apply:** Click the Apply button to apply the new IP Configuration.

Operation



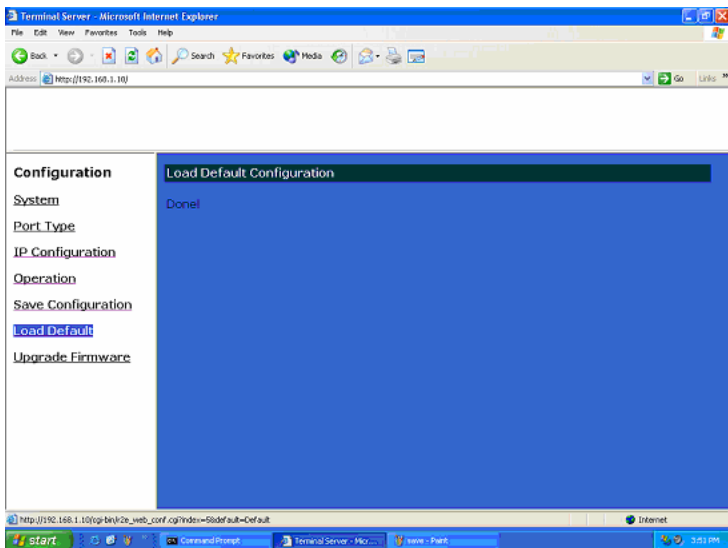
- Operation mode: Choose the Server/Client mode. This is only applicable in TCP protocol.
- Protocol: Choose the Internet protocol. You may choose TCP or UDP.
- Local port Number: Pick an unassigned port number (for example 2001). This number will be used by the device on the other side for TCP/UDP communication.
- Remote Port Number: Enter the port number of the device on the other side for your Serial Device Server to connect to.
- Auto-Disconnect Time: The amount of idle time in seconds before Serial Device Server disconnects.
- Apply: Click the Apply button to apply the new settings of Operation.
- Refresh: Click the Refresh button to update the screen with the last saved Operation.

Save Configuration



- Click Save Configuration.

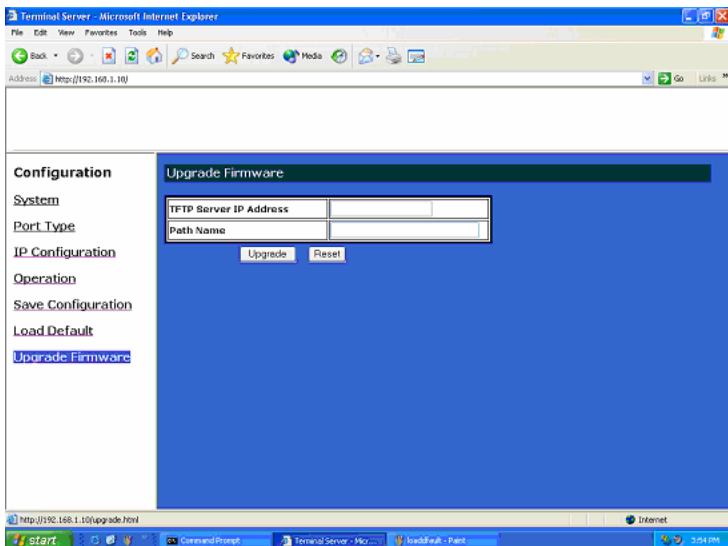
Load Default



- Click Load Default to reset the configuration to factory default.
- Click “Ok” to confirm or “Cancel” to exit.

Note: The default IP address is 192.168.1.10

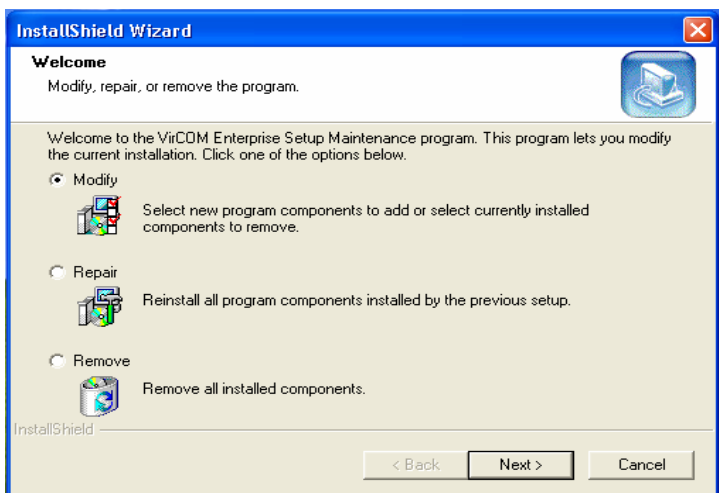
Upgrade Firmware



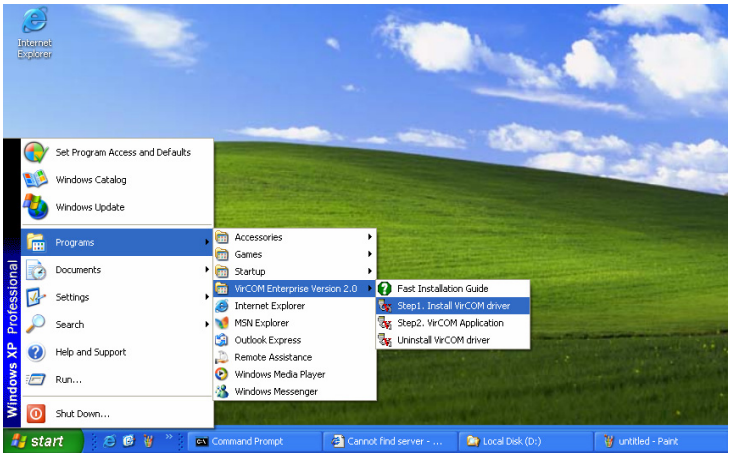
- Set up the TFTP server. Run the TFTP server program from the host computer and store the new firmware file to the default directory of the TFTP server program.
- Click Upgrade firmware; enter TFTP Server IP Address and path name (including the file name of the upgrading firmware) to upgrade software.

VirCom Installation

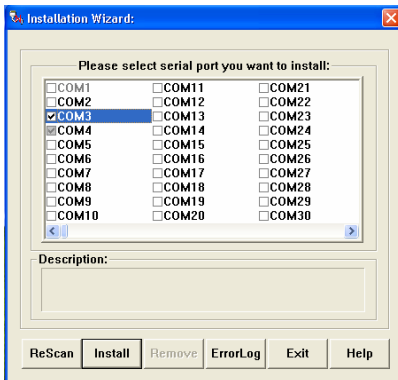
The Following Chapter explains how to install the “VirCom” Virtual Device Driver software to connect your computer’s Ethernet port to a Serial Device Server over an Ethernet-based local area network.



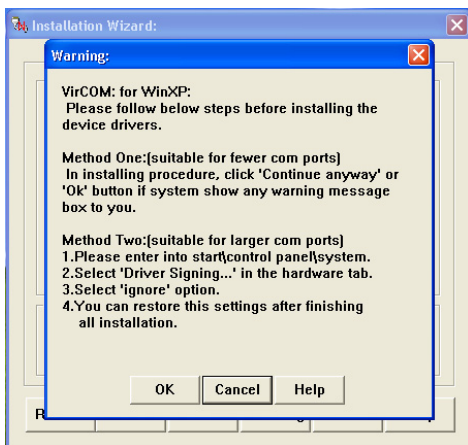
- Make sure the Serial Device Server is connected to the same network as the PC where you are installing VirCOM.
- Install VirCOM from the software CD. Select the complete install option.



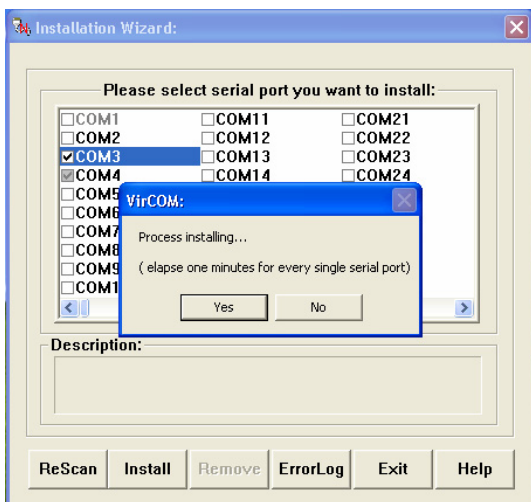
- Go to setup from the Start Menu > Program > VirCOM Enterprise Version X > Step1. Install VirCom driver.



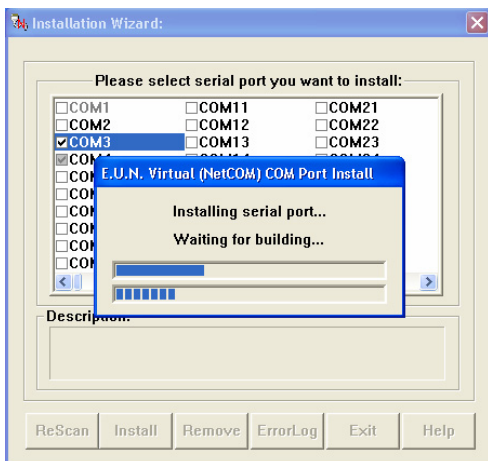
- Select the com port to connect the driver. This cannot be a physically existing com port or pre-occupied virtual com port.



- Click "OK" to confirm.



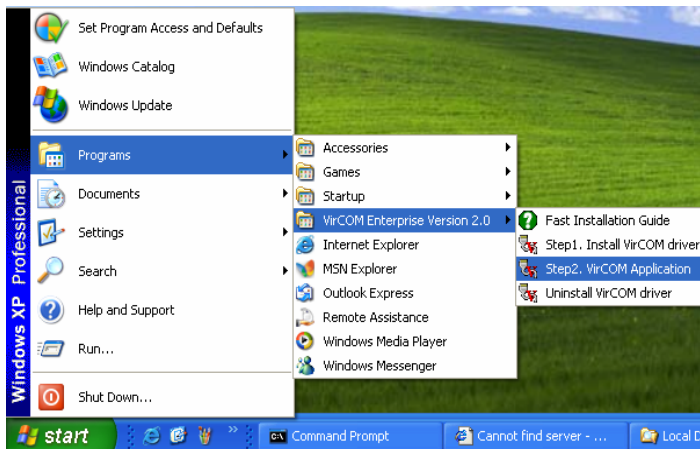
- Click "Yes" to approve scanning every single serial port on your computer.



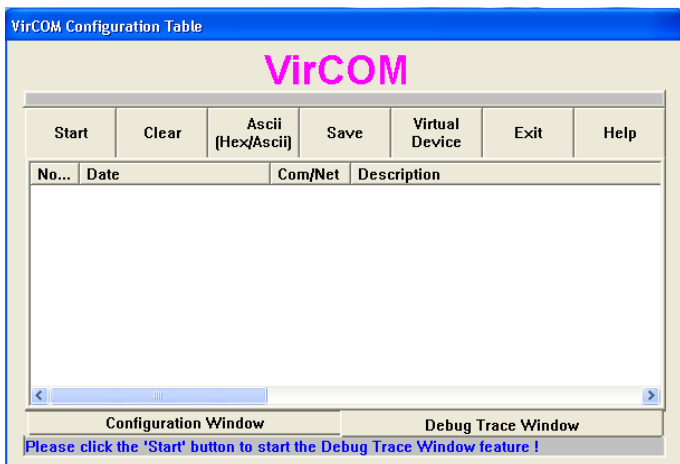
- The “waiting for building channel” window shows up. Please allow it to complete as it installs virtual serial ports for the Serial Device Server.



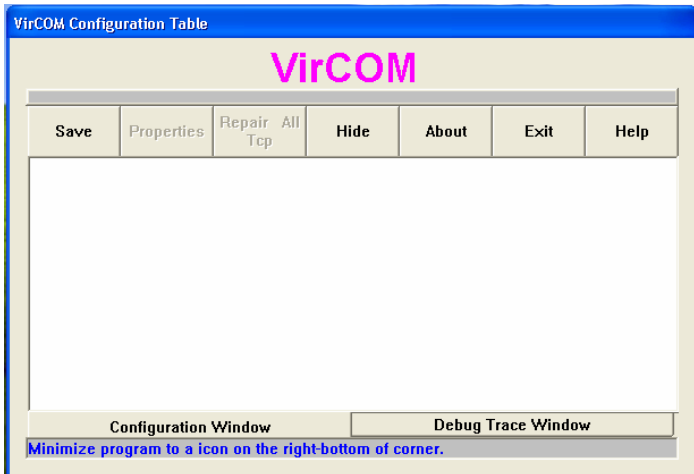
- If the above error appears, click “Continue Anyway”.
- Reboot your PC as requested to complete step1.



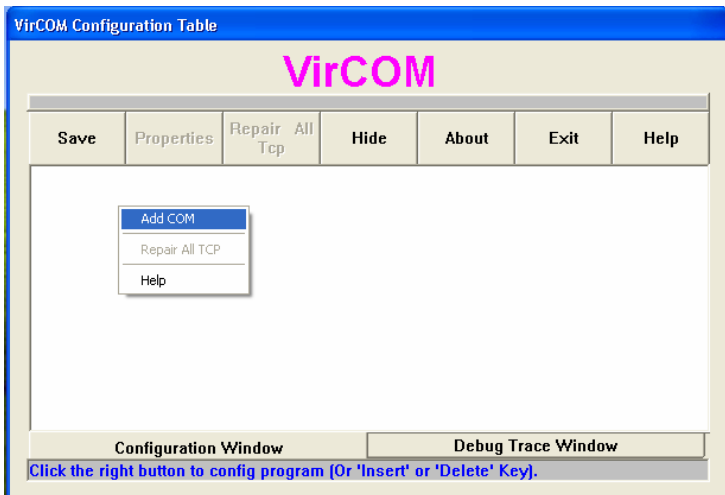
- Start Step2. VirCOM Application located in the start menu, usually in the path: *start > Programs > VirCOM Enterprise Version X > Step2. VirCOM Application.*



If this window shows up, click the “Configuration Window” tab in the lower left to start your session.



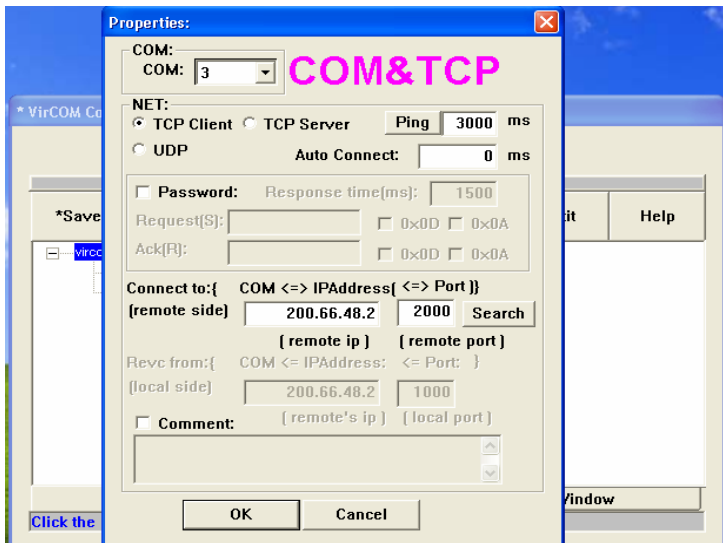
- Click the “Configuration Window” Button.

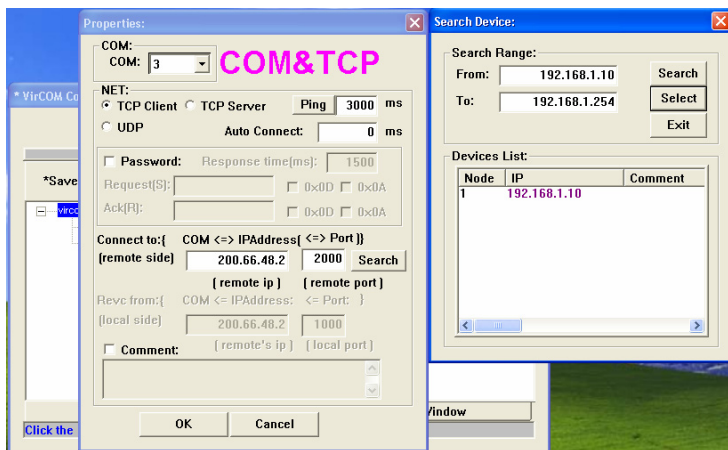


- Right Click within the window as shown
- Click “Add COM” to add a new com port to your PC

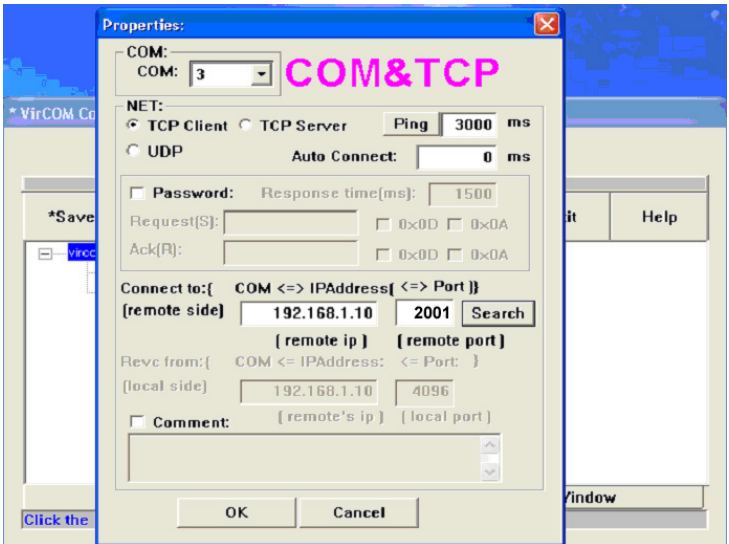
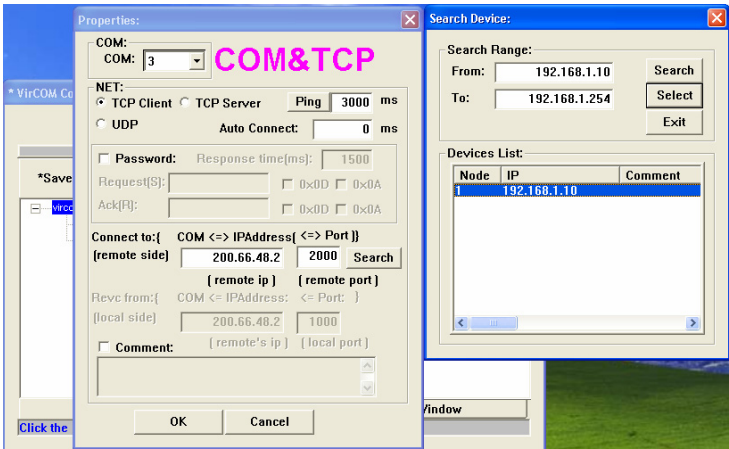
- Select the COM port you chose in step 1 and choose TCP/UDP port by left clicking the mouse.

Note: When your Serial Device Server is set as TCP Server, your VriCOM new com port needs to be set as TCP Client and vice versa.

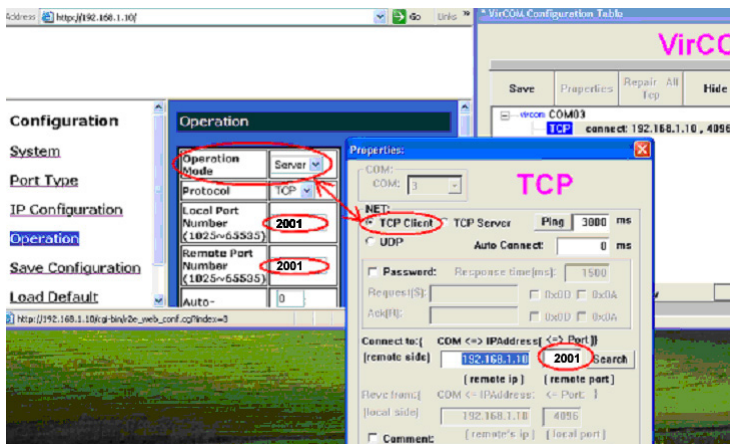
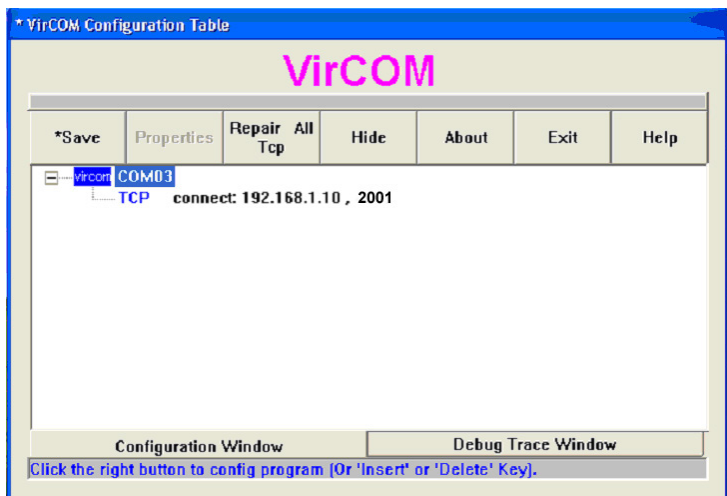




- If TCP client is selected, the VirCom needs a remote site IP address which is the local address of your Serial Device Server. You may directly key in the address or have VirCom search for you if the computer is in the same local area network as the Serial Device Server.
- If you opted for VirCom to search, please highlight the targeted IP of the intended Serial Device Server and press “Select”. VirCom will list all the Serial Device Server in the same local area network.

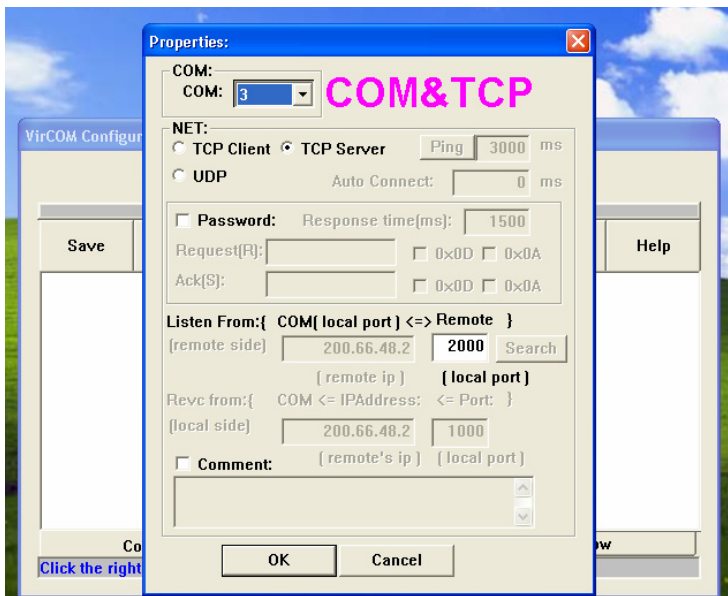


- VirCOM will automatically update your remote IP address.
- Click “OK” to confirm and continue. The following window will appear.



- **WARNING:** If your Serial Device Server is set as a TCP server, you have to select VirCOM as a TCP Client. Local Port Number on Serial Device Server must match the Remote Port Number for VirCOM.

If your Computer sets VirCOM-RJ45 as TCP Server, your Serial Device Server must be set as TCP Client.



Specifications

Applicable Standards	IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX/FX EIA/TIA RS-232E EIA/TIA-574
Fixed Ports	1 x 10/100Base-TX RJ-45 type or 100Base-FX SC/ST connector 1 x 9-Pin or 25-Pin D-sub female Serial connector
Max. Distance	10/100Base-TX: 100meters (Cat. 3/4/5) 100Base-FX: 50 or 62.5/125 μ m multi-mode fiber (1300nm) up to 2km, 9 or 10/125 μ m single-mode fiber (1300nm) up to 75km RS-232: 15 meters RS422, RS485: 1,200 meters
Data Rate	10/100Base-TX: 10 or 100Mbps 100Base-FX: 100Mbps Serial: 600 bps ~ 230.4 kbps (asynchronous)
Signals	RS-232: DCD, TxD, RxD, DTR, SG, DSR, RTS, CTS RS-422: TX-, TX+, RX+, RX- RS-485: Data-, Data+
Configuration	Parity: None, even, odd Data bits: 5, 6, 7, 8 Stop bits: 1, 2 Flow Control: None, RTS/CTS, Xon/Xoff
LED Indicators	Per Unit: PWR Per Port: LNK/ACT, FDX, STA (On is idle; Blink is running)
Dimensions	80.3mm (W) $\times$ 109.2mm (D) $\times$ 23.8mm (H) (3.16" (W) $\times$ 4.3" (D) $\times$ 0.94" (H))
Weight	0.8Kg (1.76lbs.)
Power	DC Jack: 12VDC, Terminal Block: 12-24VDC 2.64W Max.
Operating Temperature	0°C ~ 45°C (32°F ~ 113°F)
Storage Temperature	-10°C ~ 70°C (14°F ~ 158°F)
Humidity	5 ~ 95%, non-condensing
Emissions	FCC part 15 Class A, CE Mark Class A, VCCI Class A

DB9 DCE female connector Pin assignments

Pin no.	RS-232	RS-422 (4 wires)	RS-485/RS422 (2 wires)	RS-232 Signal names
1	DCD			Data Carrier Detect
2	RxD	TX-	Data-	Received Data
3	TxD	TX+	Data+	Transmitted Data
4	DTR			Data Terminal Ready
5	SG			Signal Ground
6	DSR			Data Set Ready
7	RTS	RX+		Request to Send
8	CTS	RX-		Clear to Send
9	—			No Used

Ordering Information

External Power Supply

TS100RJ	Single Port RS-232/422/485 (DB9) to 10/100TX Converter
TS100C	Single Port RS-232/422/485 (DB9) to 100FX (SC, MM) Converter
TS100T	Single Port RS-232/422/485 (DB9) to 100FX (ST, MM) Converter
TS101RJ	Single Port RS-232/422/485 (DB25) to 10/100TX Converter
TS101C	Single Port RS-232/422/485 (DB25) to 100FX (SC, MM) Converter
TS101T	Single Port RS-232/422/485 (DB25) to 100FX (ST, MM) Converter

Terminal Block

TS130RJ	Single Port RS-232/422/485 (DB9) to 10/100TX Converter
TS130C	Single Port RS-232/422/485 (DB9) to 100FX (SC, MM) Converter
TS130T	Single Port RS-232/422/485 (DB9) to 100FX (ST, MM) Converter
TS131RJ	Single Port RS-232/422/485 (DB25) to 10/100TX Converter
TS131C	Single Port RS-232/422/485 (DB25) to 100FX (SC, MM) Converter
TS131T	Single Port RS-232/422/485 (DB25) to 100FX (ST, MM) Converter

*ST fiber also available in Single-Mode, 20Km.

*SC fiber also available in Single-Mode, 20/40/75Km.

*SC fiber also available in WDM Single-Mode, 20/40Km.